

# Using the EPA's PROJECT Computer Model to Determine When a P2 Project Will Be Profitable

*Presented by*

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## **Training Materials**

# **PROJECT 2.0:**

**A model to determine the  
profitability of P2 projects**

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**SECTION I:**  
**OVERVIEW OF PROJECT**

## WHAT IS PROJECT?

- PROJECT is a computer program that runs in the Windows™ operating environment, version 3.1 or higher (e.g., Windows 95, 98, or NT).
  - PROJECT was designed to help enforcement personnel determine maximum amount by which to mitigate proposed civil penalty in exchange for agreement to perform a supplemental environmental project (SEP).
  - PROJECT can also calculate value of injunctive relief and most importantly,
  - PROJECT can determine the profitability of a proposed P2 project
- PROJECT is easy to use, especially with its many available forms of assistance:
  - A context-sensitive “help” feature within the model — accessed through the “F1” key— means that information is always only a keystroke away.
  - These *Training Materials* provide a hands-on tour through the model.
  - The *User’s Manual* provides a more in-depth explanation of the model.
  - Jonathan Libber of EPA’s Office of Enforcement and Compliance Assurance is available to answer policy and legal questions at libber.jonathan@epa.gov or 202-564-6102.
- The *PROJECT User’s Manual* provides complete installation instructions; you can obtain the model from [www.epa.gov/Compliance/civil/programs/econmodels/index.html](http://www.epa.gov/Compliance/civil/programs/econmodels/index.html).
- PROJECT uses modern and generally accepted financial principles to determine the actual financial impact of proposed projects, both P2 projects and SEP’s.
- PROJECT was designed for use in evaluating proposed SEP’s for settlement negotiations. In the course of using it to evaluate P2 projects, we found that some of them were yielding negative answers. (i.e. they were saving the company or municipality money).

This means that all the costs of the P2 project, including the financing costs, were covered and project was saving money beyond even this point.

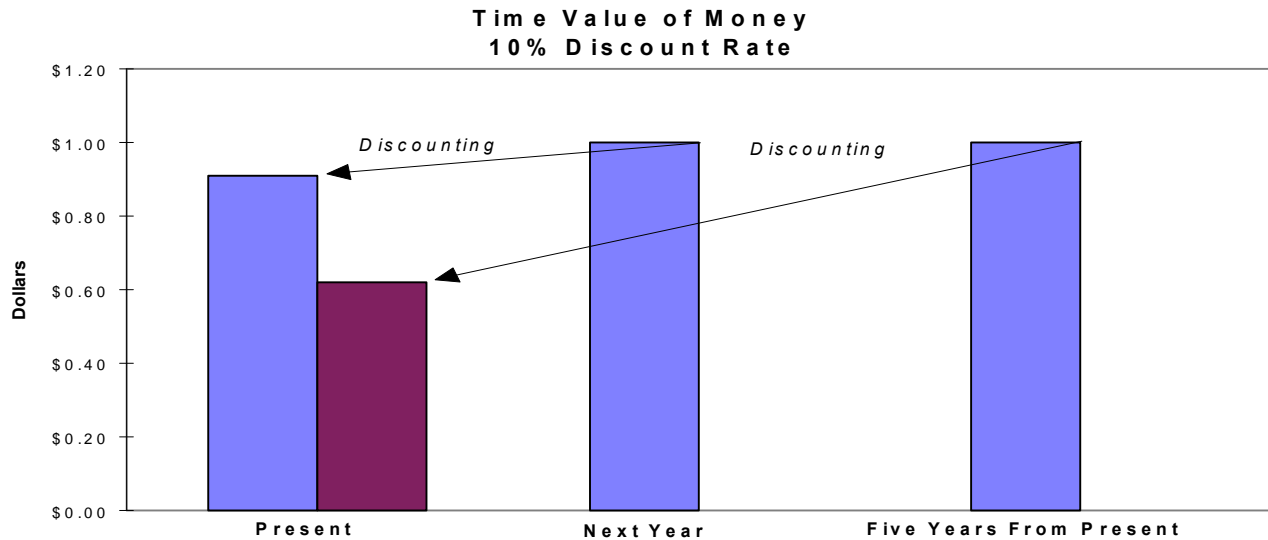
## **UNDERLYING FINANCIAL THEORY: TIME VALUE OF MONEY**

- The concept of present value accounts for the “time value of money.”
  - A dollar today is worth more than a dollar one year from now because of investment possibilities.
  - Time value of money is quantified by “discounting” costs from different years to “net present value” as of some common date.
  - This allows comparison of cash flows from different years on the same basis.

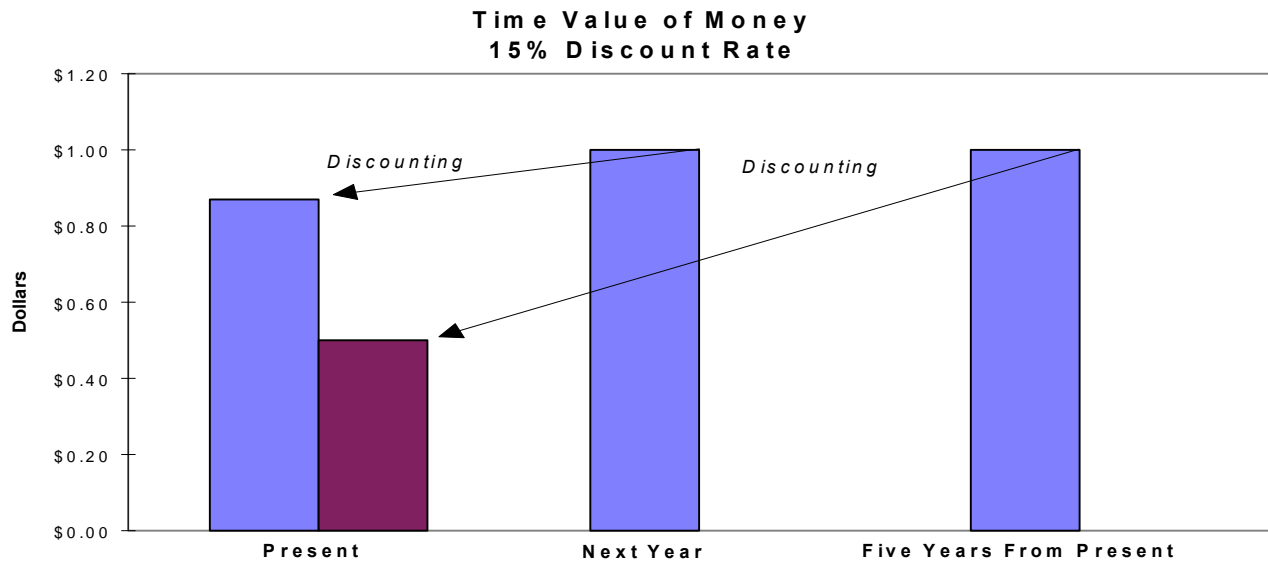
For example: I tell people I only used to pay 35 cents for a gallon of gas when I had a lawn mowing business in 1972, and now we pay \$1.39 a gallon. But which is really more expensive? With the time value of money, you can make that comparison.

## “TIME VALUE OF MONEY” EXAMPLE

- Assuming a discount rate of 10 percent, \$1.00 one year from now has a net present value (NPV) of \$0.91; \$1.00 five years from now has a NPV of \$0.62:



- With a discount rate of 15 percent, respective results are \$0.87 and \$0.50:

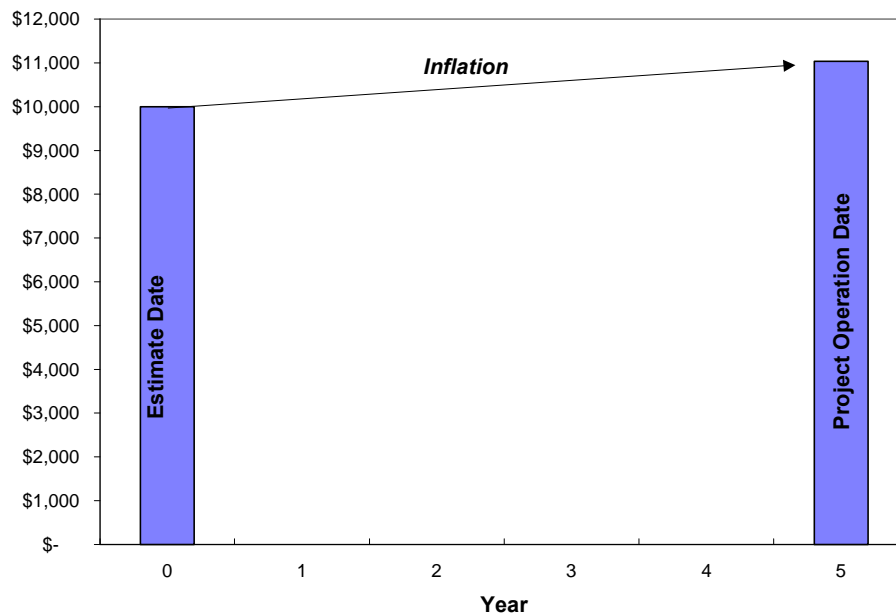


## PROJECT EXAMPLE

- The environmental affairs department of the XYZ company has been asked to make a presentation at the annual board meeting in January of Year “3,” regarding whether a proposed P2 project will result in net savings after two years of operation. The project, if approved, will begin on January 1 two years later (i.e., Year “5”), and entails a one-time nondepreciable expenditure of \$1,000,000 (after tax—assumed to be deductible), originally estimated in Year “0.” The project will save operation and maintenance expenses estimated at \$500,000 (in year “0” dollars after tax).
- To answer this we need to determine the net present value of the project as of the date of the board meeting (i.e., January 1 of Year 3).
- The first step is to adjust for inflation. The original cost estimate of \$1,000,000 is from Year 0, but the expenditure will not be incurred until the project operation date (i.e., January 1 of Year 5), and by then it will be \$1,104,100. This increase is calculated from an assumed inflation rate of 2% (i.e., \$1,000,000 times 1.02 raised to the fifth power — reflecting a five-year period — which equals \$1,104,100).
- The calculation is therefore:

$$\begin{aligned} &\text{Original Cost Estimate} \times (1 + \text{Inflation Rate})^{\text{Number Of Years}} \\ &\$1,000,000 \times 1.02^5 \\ &\$1,000,000 \times 1.1041 \\ &\$1,104,100 \end{aligned}$$

### Inflation Adjustment



**Figure 4** Left margin is in hundreds of dollars.



## PROJECT EXAMPLE (continued)

- The second step is to determine the value as of the board meeting date.
- We discount the P2 project cost as of the project operation date (i.e., \$1,104,100 as of January 1 in Year 5) back to January in Year 3, assuming a 10.0% discount rate. The calculation is \$1,104,100 divided by 1.10 raised to the 2nd power — reflecting a two-year period — which equals \$912,500.

The calculation is therefore:

Initial Present Value / (1 + Discount Rate)<sup>Number Of Years</sup>

\$1,104,100 / 1.10<sup>2</sup>

\$1,104,100 / 1.21

\$912,500

- The PROJECT value of \$912,500 is therefore the out of pocket cost of the adopting the P2 project without considering any savings it might yield..

### Discounting

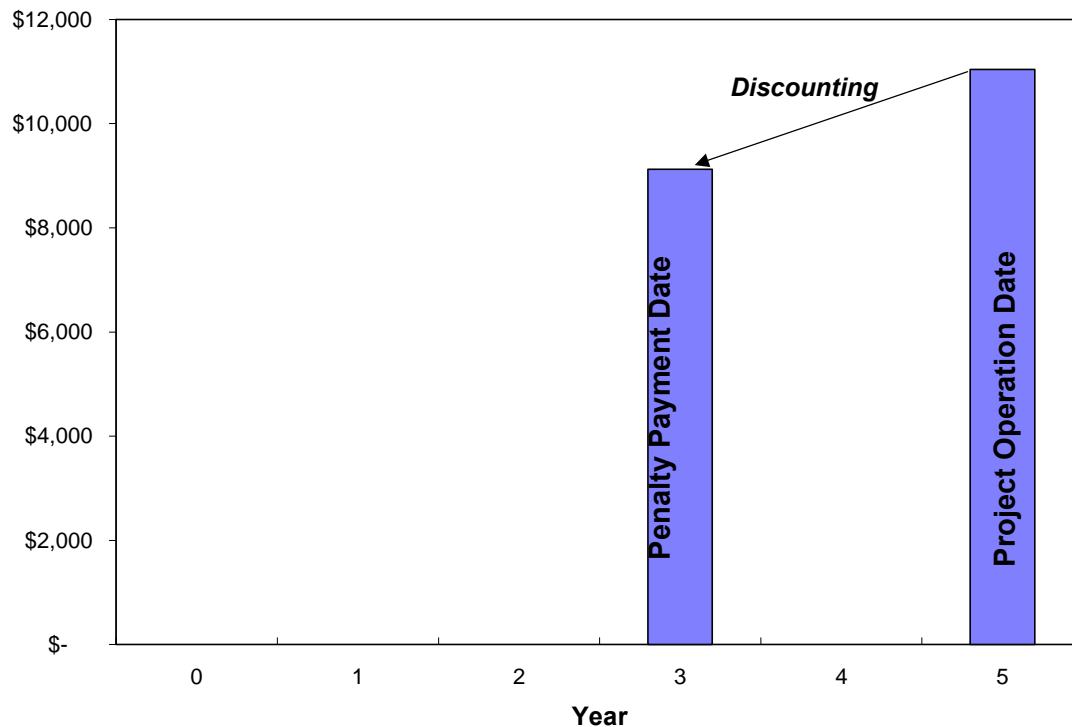


Figure 5 Dollars in hundreds of dollars

## Operation and Maintenance Savings Impact on the Calculation

- The third step is to determine the impact of any cost savings from the P2 project. The project will save operation and maintenance expenses estimated at \$500,000 (in year “0” dollars after tax).
- To answer this we need to determine the net present value of the savings for the first two years of the project as of the date of the board meeting (i.e., January 1 of Year 3).
- The first step is to adjust for inflation. The original cost estimate of \$500,000 is from Year 0, but the expenditure will not be incurred until the project operation date (i.e., January 1 of Year 5), and again in year 6. In year 5, the O & M savings will be worth \$552,500, and in year 6 they will be worth \$561,000. This increase is calculated from an assumed inflation rate of 2%. In the first year of operation, the \$500,000 times 1.02 raised to the fifth power — reflecting a five-year period — equals \$552,500).
- The calculation of the inflation adjustment for the first year of O&M savings is therefore:  
$$\begin{aligned} &\text{Original Cost Estimate} \times (1 + \text{Inflation Rate})^{\text{Number Of Years}} \\ &\$500,000 \times 1.02^5 \\ &\$500,000 \times 1.1041 \\ &\$552,500 \end{aligned}$$
- For the second year of operation, the calculation is therefore:  
$$\begin{aligned} &\text{Original Cost Estimate} \times (1 + \text{Inflation Rate})^{\text{Number Of Years}} \\ &\$500,000 \times 1.02^6 \\ &\$500,000 \times 1.126 \\ &\$561,000 \end{aligned}$$
- Now we know the P2 project O & M savings as of the project operation date and one year later, but we still need to determine the value as of the board meeting date so we can make the appropriate reduction in the costs of adopting the project. We need to discount each year of savings individually back to Year 3.
- We discount the first year of savings as of the project operation date (i.e., \$552,500 as of January 1 in Year 5) back to January in Year 3, assuming a 10.0% discount rate. The calculation is \$552,500 divided by 1.10 raised to the 2nd power — reflecting a two-year period — which equals \$456,611.

The calculation for the first year of O&M savings is therefore:

$$\begin{aligned} &\text{Initial Present Value} / (1 + \text{Discount Rate})^{\text{Number Of Years}} \\ &\$552,500 / 1.10^2 \\ &\$552,500 / 1.21 \\ &\$456,611 \end{aligned}$$

- We discount the second year of savings as of the project operation date (i.e., \$561,000 as of January 1 in Year 6) back to January in Year 3, assuming a 10.0% discount rate. The calculation is \$561,000 divided by 1.10 raised to the 3rd power — reflecting a three-year period — which equals \$421,487.

The calculation is therefore:

Initial Present Value / (1 + Discount Rate)<sup>Number Of Years</sup>

\$561,000 / 1.10<sup>3</sup>

\$561,000 / 1.331

\$421,487

- The costs as of January Year 3 were \$912,500, but you then subtract the savings from the first two years of the project. Thus \$912,500 - (\$456,611 + \$421,487) = \$34,351 is therefore the cost of the P2 project. While this tells us that it will result in a net loss to the company, the savings per year are so substantial that it is probably worth continuing the project. The company would probably break even by just operating it only two more months.

**SECTION II:**  
**USING PROJECT**

## MAIN SCREEN/CREATING A CASE

- When you first open PROJECT the main screen appears, which is where you create cases and runs. Tab and enter keys will move you sequentially through the input areas, but you can also use your mouse to input data in any order.
- From here you can also access file, window, and help pull-down menus, which allow you to open, close, create, save, or exit files (which are saved as “\*.prj”), as well as modify your printer setup (just as in most Windows™ applications). The window menu allows you to shift between multiple open PROJECT cases. For help use the help pull-down menu, or press F1 anytime.
- The first three inputs on the case screen are case name, analyst name, and office/agency. These appear on the bottom of result printouts but do not affect the present value calculation. Case name and analyst name can be any length and include any characters.
  - Case name can be name of project or anything else relevant to case.
  - Choose office/agency (formerly EPA region) from pull-down menu that lists all ten regions, EPA headquarters, and “other,” or type in your own entry.
  - Analyst name is usually the name of the person performing the analysis.
- The company’s entity type, state, and possibly customized tax rate together determine the tax rate PROJECT applies to company’s cash flows.
  - Select “Not-For-Profit” for governmental jurisdiction or charity, “C-Corporation” for company that files tax form 1120 or 1120-A (which includes virtually all publicly traded companies), or “For-Profit Other than C-Corporation” for all other types of companies (i.e., S-Corporations, partnerships, sole proprietorships).
  - From pull-down menu select state in which company conducts its business (which is not necessarily its state of incorporation), or AVG (for an average of all states).
  - If you have a compelling reason, customize the combined tax rate. PROJECT’s default is based on highest marginal tax rate.
  - If you later change the entity type or state, you will lose any customized rate you may have entered.
- Penalty payment date (PPD) in the enforcement context tells us when we expect the a penalty will be paid. It is merely a surrogate for the date you wish to convert the costs to. For example, if you want to know how profitable (or unprofitable) a P2 project will be as of January 1, 2004, then that is the date you would use here.
- Only after you have entered all required case inputs can you create runs.

**PROJECT**  
File Window Help

EXAMPLE.PRJ

**Case**  
Case Name: Example Case  
Region: Region 1  
Analyst: J. Analyst

**Taxes**  
Entity  
☐ Not-For-Profit  
☒ C-Corporation  
☐ For-Profit Other than C-Corporation  
State: MA  
Federal Tax: 35.0% State Tax: 9.5% Combined: 41.2%  
Combined = Federal + State \* (1 - Federal)

Penalty Payment Date: 01-Jan-1999

**Runs**  
New Run:  
Add  
Existing Runs:  
Test Run  
Test Run 2--POD 1/1/2002  
Enter/Edit  
Calculate  
Copy  
Remove

## CREATING A RUN

- The right-hand side of the main screen is for managing runs: each case can contain multiple runs (either for additive purposes or sensitivity analysis), with run names in any format.
  - To add a run, enter run name under “New Run:” and press **[Add]**.
  - To enter or edit data for a run, select its name and press **[Enter/Edit]**.
  - To calculate a run, select its name and press **[Calculate]**.
  - To copy a run, select its name and press **[Copy]**.
  - To remove a run (permanently!), select its name and press **[Remove]**.
- Cost estimates can include — but do not require — dollar signs and commas. Decimals are acceptable but PROJECT will round amount to nearest dollar.
- Each cost estimate needs an estimate date that includes year, month, and day. PROJECT will accept most date formats. If you do not have an exact date, enter a reasonable estimate. Each estimate also has an inflation rate that you can customize (with the default based upon a projected increase for the Plant Cost Index from *Chemical Engineering* magazine).
- Capital investments include all depreciable outlays (i.e., assets that wear out over time).
  - Examples include buildings, stack scrubbers, wastewater treatment systems, trucks.
  - Include all installation and design costs.
  - Alternatively, if the P2 project entails donating equipment, then enter the amount as a one-time nondepreciable expenditure.
  - If the P2 project will obviate the need to purchase certain pollution control equipment, that should be reflected in this cost category by subtracting the cost of the equipment avoided from the capital cost of the P2 project. If the resulting number is negative, add a dash in front of it.
- One-time nondepreciable expenditures occur once and do not depreciate.
  - Examples include land purchases, designing training program, consulting studies.
  - PROJECT assumes these expenditures are tax deductible. For land purchases, be sure to change this assumption by unchecking the check box.
  - Alternatively, if the P2 project entails donating land, then specify as tax-deductible.
- Annually recurring costs are periodic actions necessary for the project.
  - Examples include labor, utilities, rent, and raw materials.
  - Exclude expenses like capital recovery, interest payments, or depreciation.
  - With P2 projects, this number can be negative when net cost savings are associated with implementation of the project. If this number is positive, then this project will not be profitable unless there is a significant savings in equipment costs as a result of the P2 project . You can still run PROJECT to see how much it will cost.

- If the number is negative and significant relative to size of the capital cost and one time expense, this project has a good chance of breaking even or even turning a “profit.” PROJECT can tell you when it will break even and how much money can be saved at various intervals.
- Project Operation Date (POD) is when P2 project will commence operation — generally when capital investments and one-time nondepreciable expenditures will be incurred, and/or annual costs will first start to be incurred. If different costs commence on different dates, may need to create multiple runs.
- Discount rate to quantify the time value of money is based on the cost of capital.
  - For companies, default is a typical weighted-average cost of capital (WACC), which represents the cost of a company’s debt and equity weighted by the value of the financing source.
  - For a not-for-profit, default is an average of municipality general obligation bond interest rates.
- If you have specific information on your company’s cost of capital, this is where you should input it. EPA feels WACC is the most persuasive interest to use, but the selection of the



interest rate is the province of the user. If the company determines that its cost of capital is higher than the model's default number, it should use the higher number, or visa versa.

The screenshot displays a software window titled 'EXAMPLE.PRJ' with a sub-header 'Example Case: Test Run'. The interface is divided into two main panels. The left panel, titled 'Project Components', contains three sections: 'Capital Investment', 'One-Time, Nondepreciable Expenditure', and 'Annually Recurring'. Each section has input fields for 'Cost Estimate', 'Estimate Date', and 'Inflation Rate'. The 'Capital Investment' section shows '\$100,000', '01-Sep-1996', and '1.7%'. The 'One-Time, Nondepreciable Expenditure' section shows '\$10,000', '01-Sep-1996', '1.7%', and a checked 'Tax Deductible' box. The 'Annually Recurring' section shows '\$1,000', '01-Sep-1996', '1.7%', and a 'Number of Credited Years' of 5. At the bottom of the left panel are fields for 'Project Operation Date' (01-Jan-2001) and 'Discount Rate' (10.9%), along with 'OK' and 'Cancel' buttons. The right panel features a 'Run:' label, an empty text box, an 'Add' button, and a list titled 'g Runs:'. The list contains 'Run' (highlighted) and 'Run 2--POD 1/1/2002'. To the right of the list are buttons for 'Enter/Edit', 'Calculate', 'Copy', and 'Remove'.

Section	Cost Estimate	Estimate Date	Inflation Rate
Capital Investment	\$100,000	01-Sep-1996	1.7%
One-Time, Nondepreciable Expenditure	\$10,000	01-Sep-1996	1.7%
Annually Recurring	\$1,000	01-Sep-1996	1.7%

Project Operation Date: 01-Jan-2001  
Discount Rate: 10.9%

g Runs:  
Run  
Run 2--POD 1/1/2002

## CALCULATING AND PRINTING RESULTS

- Enter all inputs before attempting to calculate results.
- To perform calculation, select existing run from list on main screen and press **[Calculate]**. PROJECT will perform calculation and present its results.
- You can also calculate multiple runs simultaneously (either for additive purposes or sensitivity analysis): select any combination of runs (using the control-click or shift-click actions with keyboard and mouse), then press **[Calculate]**.
- PROJECT will summarize your inputs and also note if you customized tax rates or discount rate.
- Use scroll bar to view results that do not fit on the screen.
- **[Done]** button returns you to main screen.
- **[Summary]** button prints information from results screen (i.e., economic benefit result and summary of your inputs).
- **[Detail]** button prints summary plus up to three pages of detailed cash flow calculations.
- If you have trouble printing your results (e.g., page orientation or paper type), try modifying printer setup, accessible under file pull-down menu on main screen.

EXAMPLE.PRJ

Example Case: Project Present Value Results

Run Name = Test Run	
Present Values as of Project Operation Date:	01-Jan-2001
A) Capital & Other One-Time Costs	\$81,098
B) Annually Recurring Costs	\$2,566
C) Initial Project Value (A+B)	\$83,664
D) Final Proj. Value at Penalty Payment Date,	
01-Jan-1999	\$68,007
C-Corporation w/ MA tax rate	
Discount Rate	10.9%
Capital Investment:	
Cost Estimate	\$100,000
Estimate Date	01-Sep-1996
Inflation Rate	1.7%
One-Time, Nondepreciable Expenditure:	
Cost Estimate	\$10,000
Estimate Date	01-Sep-1996
Inflation Rate	1.7%
Tax Deductible?	Y
Annual Costs:	
Cost Estimate	\$1,000

Print

Summary

Detail

Done

Enter/Edit

Calculate

Copy

Remove

**IMPACT OF INPUT CHANGES ON PROJECT RESULT**  
(Holding All Other Variables Constant)

<b>Input Item</b>	<b>Direction of Change</b>	<b>Impact on Result</b>
Case Name, Analyst, EPA Region	N.A.	N.A.
Entity Type	not-for-profit to c-corp. or other for-profit	decrease
Marginal Tax Rate	increase	decrease
Penalty Payment Date (PPD)	later	increase
Cost Estimates	increase	increase
Inflation Rates	increase	increase
Tax Deductibility of One-Time Nondepreciable Expenditure	tax deductible to not tax deductible	increase
Credited Years for Annual Costs	increase	increase
Project Operation Date (POD)	later	decrease
Discount Rate	increase	varies

**SECTION III:**  
**SAMPLE PROBLEMS**

## OVERVIEW OF SAMPLE PROBLEMS

- This section contains three sample problems..
- For each sample problem, the first page provides you with a scenario and several assignments.
- Following each example, we have attached the solution containing the results from the PROJECT model output sheets so you can see how the data should be entered and what the results should look like. If you would like to run the model yourself, just click on our website and download the model (and user manual if you wish). The web address is: [www.epa.gov/Compliance/civil/programs/econmodels/index.html](http://www.epa.gov/Compliance/civil/programs/econmodels/index.html).
- When you start a sample problem in PROJECT, you should first create a new file for the case (i.e., using the “Control-N” keystroke, or choosing “New” from the file pull-down menu, just as in any standard Windows application).
- Then, for each new assignment, create a new run. You can either start a run from scratch by typing in its name in the space under the “New Run” heading on the main screen, or by selecting a run for a prior assignment and clicking **[Copy]**.
- If your results are off by only a small amount, some of your dates may differ slightly from the solutions. (If you entered your dates using a nontraditional format, be sure that PROJECT has interpreted your dates in the manner you intended.)

## **Pollution Prevention Proposed Project #1 - Change in Process**

The ABC Company's main line of business is to produce high tech coated metals for various industries in the Huntsville, Alabama area. ABC needs to open an additional coating line to meet increased demand for its coated metal. The current coating process results in substantial amounts of air emissions that need to be controlled with an elaborate fume collection system. A proposed redesign of the process would substitute water based coating material which would obviate the need for the fume collection system and would allow the company to recover most of the coating material that did not end up on the metals. The consultant's report, dated February 2, 2002, indicates that the cost of refitting the current machinery with new sprayers to accommodate the new coating material is \$50,000. But not having to install the fume collection system would save the company \$30,000. The annual savings from recovering coating material is \$15,000. The annual cost of operating the coating recovery system is \$7,500. The P2 project should be operational by December 10, 2003.

Your management wants you to figure out the following:

- As of December 5, 2002, determine if this P2 project can break even.
- As of December 5, 2002, determine what the financial impact to ABC would be running this project for 2 years.
- As of December 5, 2002, determine what the financial impact to ABC would be running this project for 5 years.
- As of December 5, 2002, determine what the financial impact to ABC would be running this project for 10 years.

### ***Solution for Proposed Project #1 - Change in Process***

You would enter the appropriate identification data and then select the C-Corporation option. While we have no specific information about this corporation, we will assume it is a C-Corporation for now. If it is a for profit entity, it might fall into the “For Profit other than C-Corporation” category in the model. Keep in mind that entity requesting the analysis will probably know what entity type it is. We know that the business is located in Alabama, so we have chosen Alabama combined federal and state tax rates. The penalty payment date is really the date your management selected for the analysis. In this case it is December 5, 2002.

The cost data would be entered as follows: \$50,000 is the cost of the new equipment, so it would be entered as a capital expense. The operation and maintenance on the new equipment would be \$7,500 per year, but the savings would be \$15,000 per year. So you would enter the net of the two (-7,500) as the annual expense. The project operation date is given as December 10, 2003. For each of the four scenarios listed, you would make a separate run. The first question is when will it break even. The model will not tell you that. It will only tell you what the costs or savings are as of a given period of time. So you need to run the model for a series of time periods. We have selected 6 different time periods so that one can compare them: 1, 2, 3, 4, 5, 10. The results were as follows:

One year	\$9,205
Two years	5,425
Three years	1,958
Four years	-1,221
Five years	-4,136
Ten years	-15,459

We would conclude from this that the project would result in net cost savings between the third and fourth year of operation.



## **Pollution Prevention Proposed Project #2 - Use of Hydrogen Fuel Cell Trucks**

The Ace Produce Company distributes produce to restaurants in the Dallas - Ft. Worth area. It has a large fleet of trucks it uses to make te deliveries. Trucks generally last about 10 years before needing replacement. Ace needs to replace six of its delivery trucks and is thinking of purchasing hydrogen fuel cell trucks to replace them. The company wants to know if this will make financial sense. The incremental extra cost per truck for hybrids is \$50,000. The extra maintenance costs are \$20,000 per truck per year. But the annual fuel savings are estimated at \$30,000 per truck. All costs are estimated as of June 6, 2002, the date of the consultant's report to Ace. The trucks would be delivered on July 1, 2003.

The company president wants you to analyze the financial impact of this project as of July 1, 2003, for the following time periods:

- One year of operation
- Two years of operation
- Three years of operation
- Five years of operation
- Ten years of operation

### ***Solution for Proposed Project #2 - Hydrogen Fuel Cell Trucks***

You would enter the appropriate identification data and then select the C-Corporation option. While we have no specific information about this corporation, we will assume it is a C-Corporation for now. If it is a for profit entity, it might fall into the “For Profit other than C-Corporation” category in the model. Keep in mind that entity requesting the analysis will probably know what entity type it is. We know that the business is located in Texas, so we have chosen Texas combined federal and state tax rates. The penalty payment date is actually the date your management selected for the analysis. In this case it is July 1, 2003.

As far as capital costs go, the incremental extra expense for each truck is \$50,000. Thus the cost entry would be \$300,000. The date for this cost figure, June 6, 2002, the date of the consultant’s report. It is also the date for all the other cost figures. The incremental extra operation and maintenance expense on the new trucks will be \$20,000 per year, but the fuel savings will be \$30,000 per year. So you would enter the net of the two (-\$10,000) times 6 as the annual expense for -\$60,000. The project operation date is given as July 1, 2003. For each of the five scenarios listed, you would make a separate run. The results were as follows:

One year	\$183,514
Two years	150,206
Three years	119,661
Five years	65,967
Ten years	-33,798

We would conclude from this that the project would result in net cost savings between the fifth and tenth year of operation. If the president wanted to know when it would break even, you would need to conduct a sensitivity analysis. You would probably want to examine years seven and eight just judging from the data we have already.

### **Pollution Prevention Proposed Project #3 - Recycling Disposable Diapers**

The city of Columbus, Ohio is considering the adoption of a program to recycle disposable diapers. Humpty Dumpty Industries is willing to install the equipment needed to recycle the diapers for \$250,000. The city will need to spend \$50,000 to purchase a plot of land for a site for the facility. And the city will also need to spend \$100,000 for special diaper pails and incur extra labor costs of \$100,000 annually. The city expects to save \$15,000 in landfill costs annually. In addition, the city has already lined up a buyer for the recycled materials. The city expects to sell the materials for approximately \$150,000 annually. The costs were determined by the city's financial department on August 15, 2002. The recycling plant should be operational by January 1, 2004.

Your management wants you to figure out the following:

1. As of December 5, 2002, determine what the financial impact to the city would be running this project for 5 years.
2. As of December 5, 2002, determine what the financial impact to the city would be running this project for 10 years.
3. As of December 5, 2002, determine what the financial impact to the city would be running this project for 15 years.

### ***Solution for Proposed Project #3 - Diaper Recycling***

You would enter the appropriate identification data and then select the Not-For-Profit option since this is a city, and it pays no taxes. We know that the city is located in Ohio, so we have selected Ohio combined federal and state tax rates. But since we selected Not For Profit, this selection makes no difference as all the tax rates for this option are 0. The penalty payment date is actually the date your management selected for the analysis. In this case it is December 5, 2002.

The cost data would be entered as follows: \$250,000 is the cost of the plant along with \$100,000 for special diaper collection pails. Thus we would combine the two new equipment costs to get \$350,000 for the capital expense. The date for this cost and all the other costs in this problem would be August 15, 2002. The site for the plant would cost \$50,000 which is entered as a one time, nondepreciable expense. We do not have worry about whether this expense is deductible as the tax rates are 0. (If this were a for profit entity, we would uncheck the tax deductible box on the data entry page.) The labor costs needed to operate the plant and collect the diapers would be \$100,000 per year, but the landfill savings would be \$15,000 per year, and the resulting sales of the recycled materials would be \$150,000 per year. So you would enter the net of the three (-65,000) as the annual expense. The project operation date is given as January 1, 2004. For each of the three scenarios listed, you would make a separate run with the PROJECT model. The results were as follows:

Five years      \$97,373

Ten years      -149,264

Fifteen years -358,484

We would conclude from this that the diaper project would result in net cost savings between the fifth and tenth year of operation. In addition, despite the significant start up costs, the project yields substantial savings.